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EXAMINER	
WOLLSCHLAGER, JEFFREY MICHAEL	
ART UNIT	**PAPER NUMBER**
1732	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,661	HANSFORD ET AL.	
	Examiner	Art Unit	
	Jeff Wollschlager	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *1-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/23/04/12/14/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 1-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in the reply filed on November 1, 2005.

Applicant's election with traverse of Group II, claims 12-35, in the reply filed on November 1, 2005 is acknowledged. The traversal is on the grounds that the consideration of both inventions would not constitute a burden on the office. This is not found persuasive because the search required for Group I is not the same search required for Group II, as noted in the restriction. The different classification of the two inventions provides evidence that a different search is required. The additional search requirement creates a burden on the examiner. The requirement is still deemed proper and is therefore made FINAL.

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show the numbering of the components found in Figure (4) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 33 states "The method of claim **20** (bold added) wherein said second solvent is water." There is insufficient antecedent basis for this limitation in the claim. There is no second solvent, or even a first solvent, in claim 20. The examiner has examined the claim as if it depended from claim 28.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12, 15, 28, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Soft Lithography" by Xia, et al., Annual Reviews Material Science, Vol. 28, 1998, pp. 153-184, (referred to as "Xia et al." from here forward), in view of Brewer (U.S. Patent 6,946,322; issued September 20, 2005; Priority date of July 25, 2002).

Claim 12 is directed to a method of creating polymer microparticles comprising the steps of applying a layer of polymer on a stamp with protruding microstructures, covering the surface of a substrate with a dissolvable material, placing the stamp, polymer coated side down, on the substrate such that the protruding microstructures

make contact with the substrate, utilizing pressure and heat to transfer the polymer from the stamp to the substrate, removing the stamp from the substrate, and dissolving the dissolvable material in a solvent to release the microparticles from the substrate.

Xia et al. teach a method known as "Soft Lithography" where they apply a layer of polymer (pg. 157, lines 2-5) on a stamp with microstructures (Abstract and pg. 161, Fig. 2a), bring the stamp into contact with a substrate, apply pressure to the substrate, and remove the stamp from the substrate material (pg. 161, Fig. 2a and the section entitled Microcontact Printing of SAMs, pg. 160-162). Xia et al. do not teach covering the surface of a substrate with a dissolvable material, utilizing heat to transfer from the stamp to the substrate, and dissolving the dissolvable material in a solvent to release the microparticles.

However, Brewer teaches the use of a wax or epoxy filler layer that is made from materials that are easily dissolved (col. 6, lines 27-32) and using a solvent to release individual semiconductor structures (col. 6, lines 61-64). Brewer also teaches the use of a heat source to facilitate the molding of the stamp to the substrate.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine Xia et al's. method of making micropolymers on the surface of a substrate with Brewer's method of making microcircuits (col. 5, lines 57-59) containing layers of electronic components and a polymer layer (see Fig 3, (170)) that are further separated from a substrate by dissolving a sacrificial material to free the electronic components and the polymer layer (see Fig 3H) to create a free standing polymer microparticle containing no electronic

components. The motivation to do so is provided by Brewer who discloses that his method is applicable to polymers or other material families being integrated onto a host substrate (col. 3, lines 15-18) and by Xia et al. who state that it is desirable to utilize their method in the areas of microelectronics and cell biology (Conclusion, page 179).

Claim 28 is directed to a method of creating polymer microparticles comprising the steps of applying a layer of polymer and a first solvent on to the individual recesses of a stamp, allowing the first solvent to evaporate, covering the surface of a substrate with a dissolvable material, placing the stamp, polymer coated side down, on the substrate such that the individual recesses make contact with the substrate and transfer the polymer from the stamp recesses to the substrate, removing the stamp from the substrate, and dissolving the dissolvable material in a solvent to release the microparticles from the substrate.

Xia et al. teach a method known as "Soft Lithography" where they apply a layer of polymer (pg. 157, lines 2-5) on a stamp with individual recesses (Abstract and pg. 161, Fig. 2a), bring the stamp into contact with a substrate, apply pressure to the substrate, and remove the stamp from the substrate material (pg. 161, Fig. 2a and the section entitled Microcontact Printing of SAMs, pg. 160-162). Xia et al. further teach bringing a solvent and polymer together in a PDMS mold and allowing the solvent to evaporate prior to transferring the polymer to a substrate (section Solvent-Assisted Micromolding (SAMIM), pg. 173-174). Xia et al. do not teach covering the surface of a substrate with a dissolvable material and dissolving the dissolvable material in a solvent to release the microparticles.

However, Brewer teaches the use of a wax or epoxy filler layer that is made from materials that are easily dissolved (col. 6, lines 27-32) and using a solvent to release individual semiconductor structures (col. 6, lines 61-64).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine Xia et al. and Brewer's teaching because it is well known in the art to utilize a sacrificial material, such as the dissolvable layer in the instant case, to release materials from a substrate and because it is known in the art that solvents may be used in place of elevated temperatures to soften and transfer polymers (Xia et al. pg. 174, lines 3-4).

As to claims 15 and 31, the stamp used in Xia et al. is a polydimethyl siloxane (PDMS) stamp (The Key Elements of Soft Lithography pg. 156, second sentence).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Spenleuhauer et al. (U.S. Patent 5,766,635; issued June 16, 1998).

Xia et al. in view of Brewer teach the subject matter of claim 12; see the 103(a) rejection above. Xia et al. in view of Brewer do not teach the further step of removing the solvent through desiccating or filtering to recover the microparticles from the substrate.

However, Spenleuhauer et al. teach the recovery of nanoparticles from a solution through evaporative drying and filtration of the nanoparticle suspension to separate the solvent from the nanoparticles (col. 3, line 50-59). Spenleuhauer et al. separate

nanoparticles from a solvent. Separating nanoparticles from a solvent is analogous, even more difficult, than separating microparticles from a solvent.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the method taught by Spenleuhauer et al. to recover nanoparticles through evaporative drying and filtration with the method taught by Xia et al. in view of Brewer because it is well known in the art to use filtration and evaporation to separate liquid solvents from small solid particles.

Claims 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Edwards et al. (U.S. Patent 5,985,309; issued November 16, 1999).

Xia et al. in view of Brewer teach the subject matter of claim 12; see the 103(a) rejection above. Xia et al. in view of Brewer do not disclose particular polymers useable to make the microparticles or material components comprising the dissolvable layer.

However, Edwards et al. disclose polymers and materials that are advantageous for use in biocompatible applications and applications requiring biodegradable polymers. Edwards et al. teach that copolymers of polyglycolic acid and polylactic acid are surface eroding polymers (col. 6, lines 25-27) and that other appropriate polymers would be those formed from methacrylic acids (col. 6, lines 37-38). Polypropyl methacrylate and polymethyl methacrylate are polymers formed from methacrylic acids.

Edwards et al. also teach that sugars (col. 7, line 1), polysaccharides (col. 6, line 39), and polyethylene glycol (col. 7, lines 55-58) are advantageous for use in applications requiring biocompatibility. Polyethylene glycol is a surfactant that helps

render the surface of the particles less adhesive (col. 7, lines17-19). It is noted that glucose is a sugar and chitosan is a polysaccharide.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to use the polymers and material components taught in Edwards et al. to practice the method of Xia et al. in view of Brewer because the polymers and materials claimed in the instant case are well known in the arts related to biocompatibility, biodegradation, and drug delivery.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Hawker et al. (U.S. Patent 6,780,492; issued August 24, 2004; priority date of March 2, 1999).

Xia et al. in view of Brewer teach the subject matter of claim 12; see the 103(a) rejection above. Xia et al. in view of Brewer do not disclose a glass substrate.

However, Hawker et al. teach that glass substrates may be used in the method of stamping self-assembled monolayers onto a substrate (abstract and col. 7, lines 25-28).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the method of Hawker et al. utilizing a glass substrate with the method taught by Xia et al. in view of Brewer because the use of glass substrates are well known in the art for their ease of use, availability, and inert behavior.

Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of

Schaper (U.S. Patent 6,849,558; issued February 1, 2005; priority date of May 22, 2002).

Xia et al. in view of Brewer teach the subject matter of claim 12; see the 103(a) rejection above. Xia et al. in view of Brewer do not teach a dissolvable material comprising polyvinyl alcohol and the solvent used to release microparticles from a substrate being water.

However, Schaper teaches a method using polyvinyl alcohol as a dissolvable template in the fabrication of microstructures (col. 7, lines 50-55) and water being used as the solvent to dissolve the polyvinyl alcohol (col. 8, lines 18-21).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the dissolvable material and solvent taught by Schaper with the method taught by Xia et al. in view of Brewer because it is well known in the art to utilize a sacrificial material, such as the dissolvable layer in the instant case, to release materials from substrates. Additionally, water is a desirable solvent due to its non-toxic nature and ready availability.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Spenleuhauer et al. (5,766,635).

Xia et al. in view of Brewer teach the subject matter of claim 28; see the 103(a) rejection above. Xia et al. in view of Brewer do not teach the further step of removing the solvent through desiccating or filtering to recover the microparticles.

However, Spenleuhauer et al. teach the recovery of nanoparticles from a solution through evaporative drying and filtration of the nanoparticle suspension to separate the solvent from the nanoparticles (col. 3, line 50-59). Spenleuhauer et al. separate nanoparticles from a solvent. Separating nanoparticles from a solvent is analogous, even more difficult, than separating microparticles from a solvent.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the method taught by Spenleuhauer et al. to recover nanoparticles through evaporative drying and filtration with the method taught by Xia et al. in view of Brewer because it is well known in the art to use filtration and evaporation to separate liquid solvents from small solid particles.

Claims 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Edwards et al. (5,985,309).

Xia et al. in view of Brewer teach the subject matter of claim 28; see the 103(a) rejection above. Xia et al. in view of Brewer do not disclose particular polymers useable to make the microparticles.

However, Edwards et al. disclose polymers that are advantageous for use in biocompatible applications and applications requiring biodegradable polymers. Edwards et al. teach that copolymers of polyglycolic acid and polylactic acid are surface eroding polymers (col. 6, lines 25-27) and that other appropriate polymers would be those formed from methacrylic acids (col. 6, lines 37-38). Polypropyl methacrylate and polymethyl methacrylate are polymers formed from methacrylic acids.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to use the polymers and material components taught in Edwards et al. to practice the method of Xia et al. in view of Brewer because the polymers and materials claimed in the instant case are well known in the arts related to biocompatibility, biodegradation, and drug delivery.

Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Schaper (6,849,558).

Xia et al. in view of Brewer teach the subject matter of claim 28; see the 103(a) rejection above. Xia et al. in view of Brewer do not teach a dissolvable material comprising polyvinyl alcohol and the solvent used to release microparticles from a substrate being water.

However, Schaper teaches a method using polyvinyl alcohol as a dissolvable template in the fabrication of microstructures (col. 7, lines 50-55) and water being used as the solvent to dissolve the polyvinyl alcohol (col. 8, lines 18-21).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the dissolvable material and solvent taught by Schaper with the method taught by Xia et al. in view of Brewer because it is well known in the art to utilize a sacrificial material, such as the dissolvable layer in the instant case, to release materials from substrates. Additionally, water is a desirable solvent due to its non-toxic nature and ready availability

Claims 20, 23, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322) and further in view of Schueller et al. (U.S. Patent 6,143,412; issued November 7, 2000).

Claim 20 is directed to a method of creating polymer microparticles comprising the steps of applying a layer of polymer on a stamp with individual recesses, placing the stamp, polymer coated side down, on a first substrate and using pressure and heat to transfer polymer from the regions between the individual recesses to the first substrate, removing the stamp from the first substrate, covering the surface of a second substrate with a dissolvable material, placing the stamp, polymer coated side down, on the second substrate such that the individual recesses make contact with the second substrate, utilizing pressure and heat to transfer the polymer from the stamp recesses to the second substrate, removing the stamp from the second substrate, and dissolving the dissolvable material in a solvent to release the microparticles from the second substrate.

Xia et al. teach a method known as "Soft Lithography" where they apply a layer of polymer (pg. 157, lines 2-5) on a stamp with individual recesses (Abstract and pg. 161, Fig. 2a), bring the stamp into contact with a substrate, apply pressure to the substrate, and remove the stamp from the substrate material (pg. 161, Fig. 2a and the section entitled Microcontact Printing of SAMs, pg. 160-162). Xia et al. do not teach applying the stamp on a first substrate using pressure and heat to transfer polymer from the regions between the individual recesses to the first substrate, covering the surface of a second substrate with a dissolvable material, utilizing heat to transfer from the

stamp to the second substrate, and dissolving the dissolvable material in a solvent to release the microparticles from the second substrate.

However, Brewer teaches the use of a wax or epoxy filler layer that is made from materials that are easily dissolved (col. 6, lines 27-32) and using a solvent to release individual semiconductor structures (col. 6, lines 61-64). Brewer also teaches the use of a heat source to facilitate the molding of the stamp to the substrate. Brewer does not teach placing the stamp on a first substrate to remove excess polymer from the regions between the recesses before transferring the polymer from the recesses to a second substrate.

However, Schueller et al. teach applying polymer to the recesses of a PDMS mold and scraping excess polymer from the surface of the mold prior to placing the mold in contact with a substrate (col. 12, lines 52-57).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine Xia et al. and Brewer's teaching because it is well known in the art to utilize a sacrificial material, such as the dissolvable layer in the instant case, to release materials from a substrate and to use heat to facilitate the transport and molding of polymer materials. Further, it would have been *prima facie* obvious to combine the method of Xia et al. in view of Brewer with the method of Schueller et al. of applying the polymer to the recesses of a PDMS mold and scraping the excess polymer from the regions between the recesses prior to transferring the polymer from the recesses to a substrate, because it is well known in the art to fill

the recesses of molds and to clean the surfaces of excess material prior to use. In the instant case, the stamp is a mold.

As to claim 23, the stamp used in Xia et al. is a polydimethyl siloxane (PDMS) stamp (The Key Elements of Soft Lithography pg. 156, second sentence).

Claim 34 is directed to a method of making polymer microparticles that contain more than one layer of polymers by applying a first polymer to the recessed areas of a stamp, applying a solution of a material and a first solvent on top of the first polymer, allowing the first solvent to evaporate leaving the material in the recesses of the stamp, and applying a layer of a second polymer into the recesses of the stamp prior to using the stamp to transfer the layered polymer to the surface of a substrate and ultimately creating polymer microparticles.

Xia et al. teach a method known as "Soft Lithography" where they apply a layer of polymer (pg. 157, lines 2-5) on a stamp with individual recesses (Abstract and pg. 161, Fig. 2a), bring the stamp into contact with a substrate, apply pressure to the substrate, and remove the stamp from the substrate material (pg. 161, Fig. 2a and the section entitled Microcontact Printing of SAMs, pg. 160-162). Xia et al. further teach bringing a solvent and polymer together in a PDMS mold and allowing the solvent to evaporate prior to transferring the polymer to a substrate (section Solvent-Assisted Micromolding (SAMIM), pg. 173-174). Xia et al. do not teach making multi-layered microparticles, covering the surface of a substrate with a dissolvable material and dissolving the dissolvable material in a solvent to release the microparticles.

However, Brewer teaches the use of a wax or epoxy filler layer that is made from materials that are easily dissolved (col. 6, lines 27-32) and using a solvent to release individual semiconductor structures (col. 6, lines 61-64). Brewer also teaches the use of a heat source to facilitate the molding of the stamp to the substrate. Brewer further teaches that multiple layers of structures may be formed utilizing the stamping methods disclosed (col. 8, line 35-col. 9, line 1). Brewer does not teach removing excess polymer from the regions between the recesses before transferring the polymer from the recesses to a second substrate.

However, Schueller et al. teach applying polymer to the recesses of a PDMS mold and scraping excess polymer from the surface of the mold prior to placing the mold in contact with a substrate (col. 12, lines 52-57).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine Xia et al. and Brewer's teaching because it is well known in the art to utilize a sacrificial material, such as the dissolvable layer in the instant case, to release materials from a substrate and to use heat to facilitate the transport and molding of polymer materials. It is also well known in the art that combinations of different materials, in layered structure, can provide desired affects.

Further, it would have been *prima facie* obvious to combine the method of Xia et al. in view of Brewer with the method of Schueller et al. of applying the polymer to the recesses of a PDMS mold and scraping the excess polymer from the regions between the recesses prior to transferring the polymer from the recesses to a substrate because

it is well known in the art to fill the recesses of molds and to clean the surfaces of excess material prior to use. In the instant case, the stamp is a mold.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322), further in view of Schueller et al. (6,143,412) and still further in view of Spenleuhauer et al. (5,766,635).

Xia et al. in view of Brewer and further in view of Schueller et al. teach the subject matter of claim 20; see the 103(a) rejection above. Xia et al. in view of Brewer and further in view of Schueller et al. do not teach removing the solvent through desiccating or filtering to recover the microparticles.

However, Spenleuhauer et al. teach the recovery of nanoparticles from a solution through evaporative drying and filtration of the nanoparticle suspension to separate the solvent from the nanoparticles (col. 3, line 50-59). Spenleuhauer et al. separate nanoparticles from a solvent. Separating nanoparticles from a solvent is analogous, even more difficult, than separating microparticles from a solvent.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the method taught by Spenleuhauer et al. to recover nanoparticles through evaporative drying and filtration with the method taught by Xia et al. in view of Brewer and further in view of Schueller et al. because it is well known in the art to use filtration and evaporation to separate liquid solvents from small solid particles.

Claims 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322), further in view of Schueller et al. (6,143,412) and still further in view of Edwards et al. (5,985,309).

Xia et al. in view of Brewer and further in view Schueller et al. teach the subject matter of claim 20; see the 103(a) rejection above. Xia et al. in view of Brewer and further in view Schueller et al. do not disclose particular polymers useable to make the microparticles or material components comprising the dissolvable layer.

However, Edwards et al. disclose polymers and materials that are advantageous for use in biocompatible applications and applications requiring biodegradable polymers. Edwards et al. teach that copolymers of polyglycolic acid and polylactic acid are surface eroding polymers (col. 6, lines 25-27) and that other appropriate polymers would be those formed from methacrylic acids (col. 6, lines 37-38). Polypropyl methacrylate and polymethyl methacrylate are polymers formed from methacrylic acids.

Edwards et al. also teach that sugars (col. 7, line 1), polysaccharides (col. 6, line 39) and polyethylene glycol (col. 7, lines 55-58) are advantageous for use in applications requiring biocompatibility. Polyethylene glycol functions as a surfactant which helps render the surface of the particles less adhesive (col. 7, lines17-19). It is noted that glucose is a sugar and chitosan is a polysaccharide.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to use the polymers and material components taught in Edwards et al. to practice the method of Xia et al. in view of Brewer and further in view of Schueller et al. because the polymers and materials claimed in the instant

case are well known in the arts related to biocompatibility, biodegradation, and drug delivery.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322), further in view of Schueller et al. (6,143,412) and still further in view of Hawker et al. (6,780,492).

Xia et al. in view of Brewer and further in view of Schueller et al. teach the subject matter of claim 20; see the 103(a) rejection above. Xia et al. in view of Brewer and further in view of Schueller et al. do not disclose a glass substrate.

However, Hawker et al. teach that glass substrates may be used in the method of stamping self-assembled monolayers onto a substrate (abstract and col. 7, lines 25-28).

Therefore, it would have been *prima facie* obvious tone of ordinary skill in the art at the time of the claimed invention to combine the method of Hawker et al. utilizing a glass substrate with the method taught by Xia et al. in view of Brewer and further in view of Schueller et al. because the use of glass substrates are well known in the art for their ease of use, availability, and inert behavior.

Claims 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322), further in view of Schueller et al. (6,143,412) and still further in view of Schaper (6,849,558).

Xia et al. in view of Brewer and further in view of Schueller et al. teach the subject matter of claim 20; see the 103(a) rejection above. Xia et al. in view of Brewer and further in view of Schueller et al. do not teach a dissolvable material comprising

polyvinyl alcohol and the solvent used to release microparticles from a substrate being water.

However, Schaper teaches a method using polyvinyl alcohol as a dissolvable template in the fabrication of microstructures (col. 7, lines 50-55) and water being used as the solvent to dissolve the polyvinyl alcohol (col. 8, lines 18-21).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the dissolvable material and solvent taught by Schaper with the method taught by Xia et al. in view of Brewer and further in view of Schueller et al. because it is well known in the art to utilize a sacrificial material, such as the dissolvable layer in the instant case, to release materials from substrates. Additionally, water is a desirable solvent due to its non-toxic nature and ready availability.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al. ("Soft Lithography") in view of Brewer (6,946,322), further in view of Schueller et al. (6,143,412) and still further in view of Spenleuhauer et al. (5,766,635).

Xia et al. in view of Brewer and further in view of Schueller et al. teach the subject matter of claim 34; see the 103(a) rejection above. Xia et al. in view of Brewer and further in view of Schueller et al. do not teach removing the solvent through desiccating or filtering to recover the microparticles.

However, Spenleuhauer et al. teach the recovery of nanoparticles from a solution through evaporative drying and filtration of the nanoparticle suspension to separate the solvent from the nanoparticles (col. 3, line 50-59). Spenleuhauer et al. separate

nanoparticles from a solvent. Separating nanoparticles from a solvent is analogous, even more difficult, than separating microparticles from a solvent.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to combine the method taught by Spenleuhauer et al. to recover nanoparticles through evaporative drying and filtration with the method taught by Xia et al. in view of Brewer and further in view of Schueller et al. because it is well known in the art to use filtration and evaporation to separate liquid solvents from small solid particles.

Conclusion

All claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Friday 7:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JW

Jeff Wollschlager
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Art Unit 1732

January 25, 2006

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